Space Weather Forecast

Issued on Monday 18 November 2024 at 12:42 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Faster solar winds solar winds bring a likelihood of enhanced geomagnetic activity at times.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24 hours, with recent Moderate class flares observed. There are currently eight sunspot regions on the visible disc. Two recently numbered regions are rounding the eastern limb. The largest sunspot region is in the far west, and this region shows simplification and a lack of activity. No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow-regime, with speeds between 320-360km/s. The interplanetary magnetic field were at Weak to Moderate levels. The north-south component varied weakly. The net result of the above solar wind measures was Quiet (0-2Kp) geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with the arriving regions contributing to a daily chance of Moderate flares and a persistent slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

The forecast is dominated by faster solar winds. A slight enhancement is expected early in the period, with a likelihood of elevated wind speeds, to around 450km/s, occurring for a time during Day 1 (18 Nov) and into Day 2 (19 Nov). Solar winds probably waning into Day 3 (20 Nov) but with the threat of further enhancement to slight elevated or elevated levels by Day 4 (21 Nov).

Quiet to Unsettled (Kp0-3) conditions expected through much of the period, with a chance of Active (Kp4) intervals through Days 1 and 2 (18-19 Nov). Activity probably then increasing through Day 4 (21 Nov) becoming generally Unsettled to Active (Kp3-4) with a chance of G1 Minor Geomagnetic Storm intervals.

Energetic Particles / Solar Radiation: There is a daily slight chance of S1/Minor solar radiation storms as the current largest sunspot region nears the western solar horizon.

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	30	30	30	40
Very Active	R3-R5 (X Class)	No	5	5	5	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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